Marine Education in Iceland

Introduction

The University of Iceland offers a series of intensive graduate level courses in Marine and Fisheries Sciences during summer, aimed at students pursuing a degree in fisheries science, marine ecology, or biological oceanography.

The program is focused on providing graduate students a one of a kind, immersive experience in fisheries ecology, marine resource management and marine conservation, within the perspective of climate change.

Courses and hands-on fieldwork are conducted at various locations in Iceland, to take advantage of the geographical diversity and enable students to experience a few of the many 'University Nature Centres' established in fishing villages throughout Iceland. It is a great opportunity to experience the magic of the long summer 'nights' of midnight sun and the natural wonders of Iceland while taking courses and making international connections that will prove useful in your graduate studies and beyond.

All lectures are conducted in English by professors and researchers at the University of Iceland. Additional lectures are conducted by invited guest speakers internationally recognized for their outstanding achievements in their respective fields.

Courses vary in size from 2–8 ECTs and each lasts a period of 1–3 weeks. Each course consists of a mixture of formal lectures, discussion groups, field or laboratory exercises, and computer modelling. In some of the courses, students are expected to complete 1–2 weeks of preparation prior to their arrival in Iceland.

Registration and Costs

The University of Iceland does not charge tuition fees. However, a registration fee of 45000 Icelandic Krónur (ISK) is charged to all students regardless of whether they take one course or many courses. Students pay the registration fee after they receive a letter of admission. Details on how to make payments will be provided at the time of admission.

Students are also required to pay for their own travel to/from Reykjavik, accommodation and food/drinks while in Iceland. The University of Iceland will be able to assist students in securing accommodation for the duration of their stay (see General Information for further details).

Students participating in the Fisheries Ecology course will also be charged 15000 ISK for the research cruise upon registration.

Please contact us at **post@marine.is** if you would like additional information.

How to Apply

Students can choose to participate in the entire summer program or select individual courses. Applications can be submitted by e-mail, fax, or post. The application form is available at the end of this document.

Applications should be submitted before 20 February 2011.

Please send completed applications to:

Email: post@marine.is

Fax: +354 525 4069

Post: Marine Education in Iceland, c/o Prof. Gudrun Marteinsdóttir, Institute of Biology, University of Iceland, Askja, Sturlugata 7, Is-101 Reykjavik, Iceland

Courses in 2011

Data Analysis for Scientists using R

Code: LÍF 623M

Dates: May 27 – June 3

Instructor(s): Dr. Bruce McAdam

Location(s): Askja, 101 Reykjavik (see Course Locations)

Credits: 4 ECTS

Description: This course will take students through the whole process of collecting, analysing and publishing data using a modern computer system. Emphasis will be placed on seeing the computer as a tool that improves the integrity of data, making it easier to replicate studies and guarantee correctness; and on working in a manner that makes it easy to transfer numerical methods and results into academic publications.

We will begin by discussing how data should be collected to make it suitable for analysis, how files on the computer should be organised, methods to deal with the large number of different data sources dealt with by most scientists, and ensuring that data integrity is retained and that an audit trail is recorded.

We will then learn how to analyse data using R. After installing the (free) software on their own computers, students will learn to write short scripts to do their analysis. This will ensure that their methods can be repeated with alternative data, and that an accurate record of statistical methods and data sources is available when writing scientific papers.

Finally, the process of using R to produce professional quality figures will be explained. The course will end with three days for the students to analyse their own data, producing results and figures aimed at a particular journal.

By the end of this course, students should be able to: i) Store many data files on a computer in an organised manner; ii) Keep track of the source of data, changes to data and methods recorded in laboratory notebooks; iii) Understand the differences between types of data files; iv) Install R on a personal computer; v) Load data from different sources into R, and perform statistical analyses; vi) Implement data analyses using R script files; vii) Write up data analyses and results for a journal, based on R script files; viii) Produce figures to publication standard using R.

Fisheries Ecology: Management and Conservation of Marine Resources in a Changing Ocean

Code: LÍF 602M

Dates: June 6 – 28

Instructor(s): Prof. Gudrun Marteinsdóttir, Dr. Tim Grabowski (Texas Cooperative Fish and Wildlife Research Unit), Dr. Heidi Pardoe, Dr. Steven Campana (Bedford Institute of Oceanography), Dr. David Conover (Stony Brook University)

Location(s): Askja, 101 Reykjavik and Sandgerði (see Course Locations)

Credits: 8 ECTS

Description: In order to reliably define the conditions under which fisheries can sustainably operate in the long-term, it is essential to have a thorough understanding of the influence of human activities and ocean climate on the ecology of the stocks in question. Climatic variation has been shown to affect behaviour and distribution of marine organisms. Changes in all of our major fish stocks have occurred in recent decades due to trends in ocean climate. Commercial fishing has also altered those which are exploited, at both the inter- and intra-stock levels. Most often, mortality imposed by fishing is considerably higher than that which occurs naturally. In addition, fishing is inherently selective. Accumulating evidence indicates that fishing has influenced the phenotypic and genetic structure, production, sustainability and recovery potential of harvested stocks.

This course will focus on the ecology of exploited marine fish resources, with particular emphasis on the effects that ocean climate and human activities have on the physiology, biology and behaviour of fish populations.

By the end of this course the students should be able to: i) Identify where the effects of climate change are most likely to manifest themselves within the biological hierarchy; ii) Recognize the potential impact of changing climate to conservation and management strategies; iii) Discuss the importance of considering both biotic and abiotic aspects of marine ecosystems for conservation and management of marine resources; iv) Integrate biological and ecological concepts into conservation and management strategies; v) Evaluate the effectiveness of marine conservation and management strategies in the face of a changing climate; vi) Demonstrate the ability to collect, analyze, interpret, and present (in a written form) data as part of a collaborative team.

Studying Marine mammals in the Wild

Code: LÍF 110F

Dates: July 1 – 10

Instructor(s): Dr. Marianne Helene Rasmussen

Location(s): Húsavík (see Course Locations)

Credits: 6 ECTS

Description: This field course will teach the fundamentals of a suite of field methodologies used in the study of free-ranging cetaceans (whales and dolphins). Students will stay at Husavik, in an integrated field course setting. During week one, students will receive background lectures on the diverse assemblage of dolphins and whales off Husavik, learn the theory and practice the use of each of the different cetacean research methodologies. The methods will include: photo-identification, tracking cetaceans at sea, ship-based survey techniques, behavioural observational techniques, vertical-array acoustics using time-delay methods, towed-array acoustics using beam-forming, bottom-mounted hydrophone recording, and shore tracking using a surveyor's transit (theodolite). Experts will present research seminars focusing on how the methodologies are used in cutting-edge research. Postgraduate students will devise and carry out a specific research project using data collected during the fieldwork. They will present the proposals at the end of week one, and specific protocols will be determined by the entire group. Postgraduate students will work alongside teams of senior undergraduate students who will choose or be assigned a specific methodology. The results of research projects will be presented in an oral presentation and then in a written report. The written reports will be due 2 weeks after the end of the field course.

Introduction to Hydrodynamic Modelling

Code: TBA

Dates: TBA (August)

Instructor(s): Dr. Kai Logemann

Location(s): Askja, 101 Reykjavik (see Course Locations)

Credits: 6 ECTS

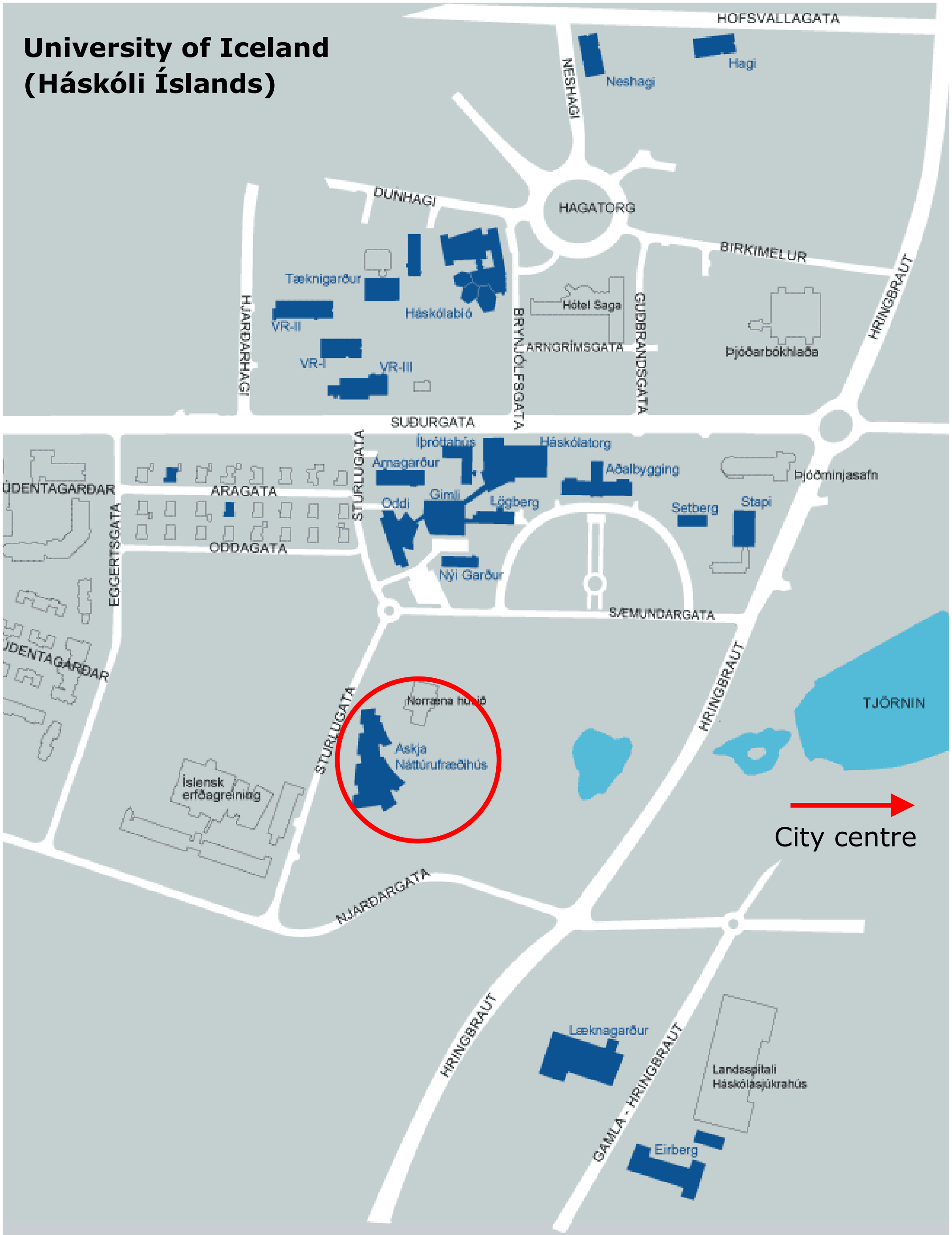
Description: The basic hydrodynamic equations and numerical methods describing the ocean will be discussed. Combined with an introduction to the programming language Fortran, the students will learn how to solve these equations with numerical methods. At the end of the course the students will have developed a simple ocean model.

The course is only open to graduate students. General computer and numeric literacy is required. Students must have some experience using a statistical computer system (e.g. Fortran, Minitab, R, S-PLUS, SAS, Matlab, SPSS...). Ideally the students should have some experience in Fortran or be willing to spend a week preparing themselves to use Fortran. Introductory material will be provided.

Course Locations

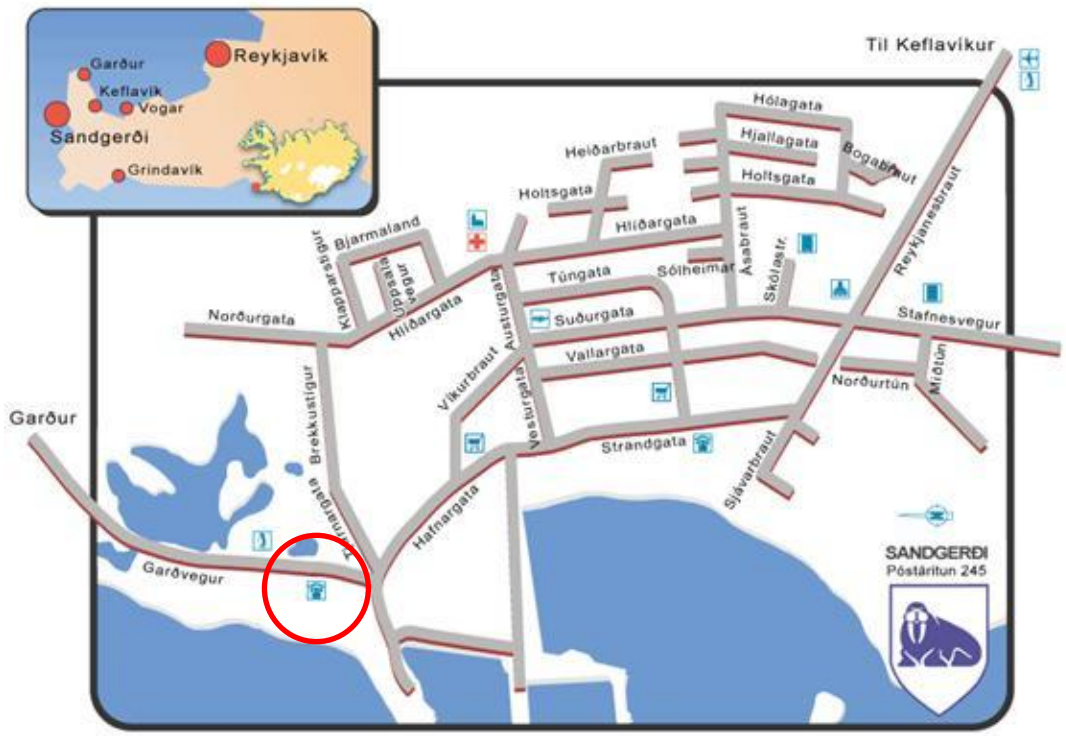
Institute of Biology, Askja, Sturlugata 7, 101 Reykjavik

The Institute of Biology is housed in Askja, a new building situated on the main University campus located in central Reykjavik (see map). Askja features state-of-the-art lecture halls as well as teaching and research laboratories. It will serve as the base of operations while courses are occurring in the Reykjavik metropolitan area.



Marine University Centre, Sandgerði

The Marine University Centre is situated by the harbour in the small fishing village of Sandgerði on the western tip of the Reykjanes Peninsula (see map). It is about a 40 minute drive from the University of Iceland in Reykjavik. The Centre boasts an excellent taxonomic laboratory, housing a massive collection of deep-water invertebrates, as well as new fish rearing and experimental facilities. The University Centre is also the home of BIOICE, a collaborative research program focused on Iceland's marine benthic fauna. Located at the same facilities are the Sandgerði Nature Centre and a museum honouring the French Arctic explorer, Jean-Baptiste Charcot.



Húsavík Research Centre, University of Iceland

The Húsavík Research Centre is located on the northern coast of Iceland on the edge of the Bay of Skjálfandi. Skjálfandi is world renowned for its diversity and abundance of marine mammals, and the University Centre offers a prime location to observe and study whales and other cetaceans.

Website: http://www.dolphinresearch.dk/husavik/husavik_001.html

General Information

Accommodation

In Reykjavik, the first 15 students to register on the summer course(s) will be able to stay at Hússtjórnarskólinn on Sólvallagötu (www.husstjornarskolinn.is) at an approximate price of 2000 ISK per night. Please contact us at **post@marine.is** for further information.

For accommodation in Húsavík, please contact Dr. Marianne Rasmussen (**mhr@hi.is**).

Exchange rates: see www.landsbanki.is/english/markets/exchangerates/

International flights: Icelandair (www.icelandair.com), Iceland Express (www.icelandexpress.com) and SAS (www.flysas.com)

International Airport: Keflavík (KEF: www.kefairport.is/English)

Transfer between airport and Reykjavik: Flybus (www.re.is/Flybus)

National flights: Air Iceland (www.airiceland.is), Eagle Air (www.eagleair.is)

Bus transport: Sterna (www.sterna.is/en), Reykjavik Excursions (www.re.is), Strætó (www.straeto.is/English)

Taxi: Hreyfill (www.hreyfill.is/hreyfill/en)

University of Iceland (Háskóli Íslands) (www.hi.is/en/introduction)

Visa Requirements: The Directorate of Immigration (www.utl.is)

Public holidays: see http://www.iceland.is/history-and-culture/Traditions/IcelandicHolidays/

Emergency number: Call **112** or see http://en.ja.is/i-neyd/for other numbers

For further useful information visit http://marice.is/information.htm

UNIVERSITY OF ICELAND

MARINE EDUCATION IN ICELAND

INSTITUTE OF BIOLOGY

ASKJA, STURLAGATA 7

IS-101 REYKJAVIK, ICELAND

APPLICATION FOR ADMISSION TO UNIVERSITY OF ICELAND MARINE AND FISHERIES SCIENCES SUMMER PROGRAM

Personal Information

Name:	
Nationality:	Date of Birth:
Address (for correspondence):	
Telephone:	Mobile phone:
E-mail:	

Education (Please feel free to attach a CV or other supporting documents)

University/Institution:	
Degree:	Graduation year:
University/Institution:	
Degree:	Graduation year:
University/Institution:	
Degree:	Graduation year:

Official transcripts of previous university studies must be submitted with this application.

How will you finance your studies in Iceland?

A. Self-supporting

B. Financial support from employer or sponsor

C. Grant or scholarship

If you checked B or C, please provide the name and address of the person or body who will be responsible for payment of your fees:

Please provide the names and contact information of the two individuals who will be submitting recommendations on your behalf.

Name:	
Position:	
Home Institution:	
Address:	
Telephone:	E-mail:

Name:	
Position:	
Home Institution:	
Address:	
Telephone:	E-mail:

Please indicate the University of Iceland summer course(s) you wish to enroll in:

Number:	Title:
Number:	Title:
Number:	Title:
Number:	Title: